

under 37 C.F.R. §§ 1.16 to 1.21 from Arnold, White & Durkee Deposit Account No. 01-2508/ADAA:105/SER.

Reconsideration in view of the remarks contained herein is respectfully requested.

AMENDMENT A

In the Claims

Cancel claim 2 without prejudice or disclaimer.

Amend claims 1, 3, 5, 6-8, 10, 11, and 13-20 as follows:

1. (Amended) An electrochemical cell, which comprises

as at least part of an anode, a lithium transition metal oxide [or sulphide] compound which has a $[B_2]X_4^{n-}$ spinel-type framework structure of an $A[B_2]X_4$ spinel wherein A and B [are] comprise metal cations selected from the group consisting of Li, Ti, V, Mn, Fe and Co with the proviso that at least one of A and B comprises Li and at least one of A and B comprises Ti, V, Mn, Fe and/or Co, X is oxygen (O) [or sulphur (S)], and n- refers to the overall charge of the structural unit $[B_2]X_4$ of the framework structure, and the transition metal cation of which in [its] the fully discharged state of the cell has a mean oxidation state greater than +3 for Ti, +3 for V, [+3,5] +3.5 for Mn, +2 for Fe and +2 for Co;

as at least part of a cathode, a lithium metal oxide [or sulphide] compound; and
an electrically insulative, lithium containing, liquid or polymeric, [electronically] ionically conductive electrolyte between the anode and the cathode, such that, on

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discharging the cell, lithium ions are extracted from the spinel-type framework structure of the anode, with the oxidation state of the metal ions of the anode thereby increasing, while a concomitant insertion of lithium ions into the compound of the cathode takes place, with the oxidation state of the metal ions of the cathode decreasing correspondingly.

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3. (Amended) A cell according to Claim 1 wherein, in the compound of the anode, B is a single transition metal cation [type].

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5. (Amended) A cell according to Claim 1, wherein the compound of the anode is a stoichiometric spinel selected from the group [comprising] consisting of $\text{Li}_4\text{Mn}_5\text{O}_{12}$, which can be written as $(\text{Li})_{8a}[\text{Li}_{0,33}\text{Mn}_{1,67}]_{16d}\text{O}_4$ in ideal spinel notation; $\text{Li}_4\text{Ti}_5\text{O}_{12}$, which can be written as $(\text{Li})_{8a}[\text{Li}_{0,33}\text{Ti}_{1,67}]_{16d}\text{O}_4$ in ideal spinel notation; LiTi_2O_4 which can be written as $(\text{Li})_{8a}[\text{Ti}_2]_{16d}\text{O}_4$ in ideal spinel notation; LiV_2O_4 , which can be written as $(\text{Li})_{8a}[\text{V}_2]_{16d}\text{O}_4$ in ideal spinel notation; and LiFe_5O_8 , which can be written as $(\text{Fe})_{8a}[\text{Fe}_{1,5}\text{Li}_{0,5}]_{16d}\text{O}_4$ in ideal spinel notation.

6. (Amended) A cell according to Claim 1, wherein the compound of the anode is a defect spinel selected from the group [comprising] consisting of $\text{Li}_2\text{Mn}_4\text{O}_9$, which can be written as $(\text{Li}_{0,89}\square_{0,11})_{8a}[\text{Mn}_{1,78}\square_{0,22}]_{16d}\text{O}_4$ in spinel notation; and $\text{Li}_2\text{Ti}_3\text{O}_7$, which can be written as $(\text{Li}_{0,85}\square_{0,15})_{8a}[\text{Ti}_{1,71}\text{Li}_{0,29}]_{16d}\text{O}_4$ in spinel notation.

7. (Amended) A cell according to Claim 1, wherein the compound of the anode is a lithium-iron-titanium oxide having a spinel-type structure and in which A comprises lithium and iron cations, [are located on the A-sites, and] while B comprises lithium, iron and titanium cations [on the B-sites].

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8. (Amended) A cell according to Claim 1 wherein, in the compound of the anode, the $[B_2]X_4$ framework structure contains, within the framework structure or within [the] interstitial spaces [of] present in the framework structure, additional metal cations to the lithium ions and the other A and B cations to stabilize the structure, with the additional metal cations being present in an amount less than 10 atomic percent.

10. (Amended) A cell according to Claim 9, wherein the framework structure of the lithium metal oxide compound of the cathode has as its basic structural unit, a unit of the formula $[B_2]X_4^{n-}$, where $[B_2]X_4^{n-}$ is the structural unit of an $A[B_2]X_4$ spinel, with the X anions being arranged to form a negatively charged anion array, and wherein

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A [is] comprises a lithium cation;

B [is a] comprises at least one metal cation;

X is oxygen (O); and

n- refers to the overall charge of the structural unit $[B_2]X_4$ of the framework structure, with the transition metal cations of the anode being more electropositive than those of the cathode.

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11. (Amended) A cell according to Claim 10 wherein, in the compound of the cathode, B is a single metal cation [type].

13. (Amended) A cell according to Claim 10, wherein the compound of the cathode is a spinel in which the B cation is selected from the group [comprising] consisting of Li, Mn, Co and Ni.

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14. (Amended) A cell according to Claim 10 wherein, in the compound of the cathode, the $[B_2]X_4$ framework structure contains, within the framework structure or within [the] interstitial spaces [of] present in the framework structure, additional metal cations to the lithium ions and the other A and B cations to stabilize the structure, with the additional metal cations being present in an amount less than 10 atomic percent.

15. (Amended) A cell according to claim 14, wherein the compound of the cathode is $Li_{1+\delta}Mn_{2-\delta}O_4$ where $0 < \delta \leq [0,1]0.1$.

16. (Amended) A cell according to Claim 14, wherein the compound of the cathode is $LiM_{\delta/2}Mn_{2-\delta}O_4$ where $M = Mg$ or Zn and $0 < \delta \leq [0,05]0.05$.

17. (Amended) A cell according to Claim 1, wherein the lithium metal oxide compound of the cathode has a [layered-type] layered structure conforming to the formula $Li_xCo_{1-y}Ni_yO_2$ where $0 < x \leq 1$ and $0 \leq y \leq 1$.